



TITLE:

# Ultraviolet Spectrophotometric Determination of Iron (III) as Chloro-complex

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## ABSTRACTS

The results indicated that the hardness of boundary-line portion was about 1.5 ~2.7 times of meshy portion.

The authors presumed that one of the major reasons of the greater wear-resistance of S-H cast iron was based upon the following characteristics :

1. The existence of a unique net structure of S-H cast iron.
2. The presence of a boundary-line portion of greater hardness in the matrix of eutectic graphite structure of lower hardness.
3. The fine and uniform distribution of fine TiC particles in S-H cast iron casting.

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### Ultraviolet Spectrophotometric Determination of Iron(III) as Chloro-complex

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The absorption spectra have been investigated for the solution of ferric perchlorate at various concentrations of hydrochloric acid. It was found that the tetra chloro-complex is formed even at the small concentration of chloride when the acidity is considerably high, but it may not be formed even at higher chloride concentration if the acidity is low. It was also assumed from the result of change in absorption spectra that the reduction of ferric to ferrous ion occurred in concentrated hydrochloric acid such as 9.6 *N*. A method for spectrophotometric determination of iron has been then studied using hydrochloric acid as reagent. Effects of temperature, acidity and diverse ions have been examined and the iron content of iron-base alloys has been determined by differential method. Some of the results obtained are as follows :

- 1) The Beer's law is followed in the range 0.2~20 p.p.m. of iron by ordinary method and up to 60 p.p.m. by differential method.
- 2) The effect of temperature to the absorbance is almost negligible in the range 10~25°C.
- 3) The presence of such cations as Na<sup>+</sup>, K<sup>+</sup>, NH<sub>4</sub><sup>+</sup>, Co<sup>++</sup>, Zn<sup>++</sup>, Mn<sup>++</sup> and Al<sup>3+</sup> does not interfere in the concentration of 200 p.p.m. For Cu<sup>++</sup> and Ti<sup>4+</sup>, it is found that the maximum allowable concentration was 2.0 p.p.m.
- 4) In the determination of the iron content of iron base alloys by the proposed method the error was about 0.4%.

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### Fluorometric Determination of Aluminum with Pentachrome Blue Black R

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